

<p align="center">BROOKHAVEN NATIONAL LABORATORY Safety & Health Services Division</p> <p align="center">INDUSTRIAL HYGIENE GROUP Standard Operating Procedure: Program Procedure</p>	<p>NUMBER IH50900</p>
	<p>FINAL rev7</p>
	<p>DATE 09/21/06</p>
<p>SUBJECT:</p> <p align="center">IH Group's Environmental Management System Program</p>	<p>PAGE 1 OF 8</p>

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SHSD Environmental Assessment Environmental Management System (EMS) (IH50900)		
<p>FORM SHSD-EMS-03-A</p>	<p>TYPE Meter Calibration with Standard Gas Mixtures</p>	<p>REVISED: 1 Date: 09/19/06</p>
<p>Operation Description: ISO10000 standard gas is presented to a certified detector to determine the gas concentration. The detector is used to verify that the meter is properly calibrated. The detector is used to verify that the meter is properly calibrated. The detector is used to verify that the meter is properly calibrated.</p>		
<p>Typical gas mixtures are not hazardous at the concentrations released to the environment. Examples are:</p> <ul style="list-style-type: none"> 25 - 50 ppm Carbon Monoxide in Air 5 ppm Hydrogen Sulfide in Air 		
<p>Frequency of Operation: Calibration 25 times per month. Frequency of Operation: Pump 75 to 100 times per month.</p>		
<p>Environmental Impact: The operations done in a non-HEPA lab hood in Building 120, Room 1-B. The hood is exhausted at 30' above building height.</p>		
<ul style="list-style-type: none"> Gas mixture cylinders are used until empty. Empty cylinders are opened, sealed in a hood to prevent contamination, and then stored in a secure area. Empty cylinders are stored in a secure area. Minerals used for testing are not hazardous. No secondary is generated, as only the final space of a bottle is released. Some chemicals may be used to create a lab bag mixture of chemicals in air. Examples of chemicals used in the lab include benzene, toluene, and xylene. In these cases, the lab bag is used to create a mixture of chemicals in air. The completion of testing, the lab bag mixture is exhausted up the hood. Concentrations are typically 1-100 ppm in air, volume to 1 to 10 liter cylinder. 		
<p>Waste Disposal:</p> <ul style="list-style-type: none"> Cylinder gases are carefully contained. Only cylinders with no gas remaining are released. These cylinders are released to a secure area to prevent the gas and liquid within the lab hood. The empty gas cylinders are then to be disposed of as scrap metal. Lab materials are sent into the lab hood. 		
<p>Qualitative Environmental Impact: None OSH Job Risk Assessment: None</p>		

1.0 Purpose & Scope

This document describes the program of the SHSD Industrial Hygiene Group for compliance with BNL's *Environmental Management System (EMS)* for ISO14001. The purpose of the procedure is to establish an effective process to analyze the environmental impacts of new and existing IH Group operations. The program is used to validate regulatory compliance and to target program improvements.

Internal IH Group EMS Goals are:

- Minimize Impact on the Environment from IH Group Operations
 - Mechanism to Active Goal: Eliminate un-necessary operations that generate wastes/emissions; Select less hazardous alternatives whenever possible; Review the EMS Program and IH Group Impact Attachment on at least an basis to keep it current
- Maintain high level of Training and awareness of the IH Group environmental program
 - Mechanism to Active Goal: Conduct IH Group Employee training on at least a bi-annual basis.

2.0 Responsibilities

This procedure is administered through the SHSD Industrial Hygiene Group.

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2.1 The IH Group Leader is responsible to:

- 2.1.1 Lead the creation of a compliant program.
- 2.1.2 Assess the IH Group's progress on the program, as necessary.
- 2.1.3 Assign IH staff to conduct operations covered by this program.
- 2.1.4 Ensure that the IH Staff follow the policies of this program.

2.2 This procedure is implemented through the SHSD Industrial Hygiene Group. The IH Group members are responsible to:

- 2.2.1 Read and understand the written SHSD Operation Environmental Evaluations (*SOEE*) (see the example in Attachment 9.1). The official version of the *SOEEs* are accessible from the [SHSD OHS/EMS/ISM Webpage](#).
- 2.2.2 Conduct operations in accordance with this program.

3.0 Definitions

SHSD Operation Environmental Evaluations (SOEE): a written evaluation of shsd operations conducted by the IH Group Leader to determine the degree of environmental impact caused by the operation and to

- ensure that control are in place to minimize the environmental impact to the greater extent reasonably achievable and
- determine the appropriate waste stream, if applicable.

4.0 Prerequisites none

5.0 Precautions none

6.0 Procedure

6.1 **Equipment:** See items listed in each *SHSD Operation Environmental Evaluation*.

6.2 **Assessing the hazard of IH Group operations:** The IH Group Leader or IH Group staff identifies operations that need to be reviewed for EMS compliance. For new operations or operations that have not been adequately analyzed, the IH Group Leader

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will assign a person to review the operation and determine needed actions. New actions and the analysis will be documented in a *SHSD Operation Environmental Evaluation*. For each IH group operation, the impact on the environment impact, minimization, and waste management will be analyzed and an appropriate mechanism established.

6.3 **Annual Review:** In the fourth quarter of each year, the IH Group Leader will review the IH Group's EMS program and determine if new elements need to be added in a *SHSD Operation Environmental Evaluation*. The review may be "collaborative" with ESWMD Environmental Compliance Representative. Elements of this review will be the accuracy of *SHSD Operation Environmental Evaluations* and the staff's training on their contents.

6.4 **Employee Involvement:**

6.4.1 When new employees enter the IH Group, via new hire, temporary assignment, or reassignment, they will read or be instructed in the content of applicable *SOEEs*.

6.4.2 When significant changes are made to *SOEE*, the IH Group Leader will forward the revised *SOEE* to each impacted IH Group employee.

6.4.3 Each employee will be expected to gain an understanding of the IH program and to sign their concurrence with policies set forth in *SOEE*.

7.0 Implementation and Training

7.1 **Qualification Criteria:** The IH Group Leader will instruct all IH staff in their role relative to this procedure, via formal sessions on the applicable *SOEE* associated with Job Training Assessments.

7.2 A written record of training will be maintained in the form of Job training Assessment Completion Certificate and tracked through the BTMS system. The form to use is maintained on the SHSD SOP web page in section [IH50300](#).

8.0 References

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BNL's ISO14001 *Environmental Management System (EMS)*.

9.0 Attachments

- 9.1 Sample of the *SHSD Operation Environmental Evaluations List*
- 9.2 Sample of a *SHSD Operation Environmental Evaluation*
- 9.3 Sample of a JTA training Record form.

10.0 Documentation

Document Development and Revision Control Tracking		
PREPARED BY: <i>(signature and date on file)</i> R. Selvey Date 02/17/04	REVIEWED BY: <i>(signature and date on file)</i> J. Peters Date 02/18/04	APPROVED BY: <i>(signature and date on file)</i> R. Selvey, IH Manager Date 02/27/04
ESH Coordinator/ Date: <i>none</i>	Work Coordinator/ Date: <i>none</i>	SHSD Manager / Date <i>none</i>
QA Representative / Date: <i>none</i>	Training Coordinator / Date: <i>none</i>	Filing Code: IH52.05
Facility Support Rep. / Date: <i>none</i>	Environ. Compliance Rep. / Date: <i>none</i>	Effective Date: 02/27/04
ISM Review - Hazard Categorization <input type="checkbox"/> High <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Low/Skill of the craft	Validation: <input type="checkbox"/> Formal Walkthrough <input checked="" type="checkbox"/> Desk Top Review <input type="checkbox"/> SME Review Name / Date:	IMPLEMENTATION: Training Completed: n/a Procedure posted on Web: 09/21/06 Hard Copy files updated: 09/21/06

Revision Log
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls Changed resulting from: <input checked="" type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input type="checkbox"/> none of the above Section/page and Description of change: Added Goals to Section 1; Added information on battery recycling in Attachment 9.1 Section 13.

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(signature/date on file) R. Selvey 06/08/04 SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls Changed resulting from: <input type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input checked="" type="checkbox"/> none of the above Section/page and Description of change: Added change to battery disposal as universal waste, ozone generating devise, and Perchlorate sink disposal into Attachment 9.1.		
(signature/date on file) R. Selvey 09/01/04 SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls Changed resulting from: <input checked="" type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input type="checkbox"/> none of the above Section/page and Description of change: Added Respirator Cleaning to Attachment 9.1. Revised the format of Section 10.		
(signature/date on file) R. Selvey 08/08/05 SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls Changed resulting from: <input checked="" type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input type="checkbox"/> none of the above Section/page and Description of change: Added the use of Isopropanol in preservation of tick specimens to Attachment 9.1.		
(signature/date on file) R. Selvey 06/26/06 SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls Changed resulting from: <input checked="" type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input type="checkbox"/> none of the above Section/page and Description of change: The new TSI 3007 Condensation Particle Counter with its use of Isopropanol was added to Attachment 9.1.		
(signature/date on file) R. Selvey 07/12/06 SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:

The only official copy is on-line at the SHSD IH Group website.
Before using a printed copy, verify that it is current by checking the document issue date on the website.

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Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input checked="" type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls		
Changed resulting from: <input type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input checked="" type="checkbox"/> none of the above		
Section/page and Description of change: Reformatted the scope of Attachment 9.1 into <i>SHSD Operation Environmental Evaluation</i> forms to ease in training of applicable persons and improve the linkage to the Job Training Assessment and the OHSAS 18001 Risk Assessments. Attachment 9.1 was converted to a sample List of <i>SOEEs</i> , Attachment 9.2 was added as a sample of the <i>SOEE</i> form. The official location for storage of the <i>SOEEs</i> was created on the SHSD OSH/EMS/ISM web page to ease inter-linking JRAs and <i>SOEEs</i> .		
(signature/date on file) R. Selvey 09/21/06 SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:

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Attachment 9.1

Sample of List of SHSD Operation Environmental Evaluations

SOEE Number	Title	Environmental Risk Ranking
SHSD-EMS-01	HEPA Filter Testing	Acceptable
SHSD-EMS-02A	Air Current Indicator Tubes	Negligible
SHSD-EMS-02B	SF ₆ Tracer Gas Studies	Acceptable
SHSD-EMS-03A	Meter Calibration with Standard Gas Mixtures	Acceptable
SHSD-EMS-03B	Battery Disposal	Moderate
SHSD-EMS-04	Perchlorate Testing	Moderate
SHSD-EMS-05A	Air Sampling With Indicator Tubes	Negligible
SHSD-EMS-05B	Air Sampling	Negligible
SHSD-EMS-05C	Gas Detection	Acceptable
SHSD-EMS-05D	Surface Sampling	Moderate
SHSD-EMS-05E	Microbiology	Negligible
SHSD-EMS-05F	TSI Monitoring	Negligible
SHSD-EMS-06	[Not Assigned]	--
SHSD-EMS-07	[Not Assigned]	--
SHSD-EMS-08	Mercury Spill Clean-Up Supplies	Moderate
SHSD-EMS-09	[Not Assigned]	--
SHSD-EMS-10	[Not Assigned]	--
SHSD-EMS-11	Chemical Management System- Coding of Chemicals at Receiving Warehouse	Negligible
SHSD-EMS-12A	Quantitative Fit Testing	Negligible
SHSD-EMS-12B	Cleaning of Fit Test Respirators	Acceptable
SHSD-EMS-13	[Not Assigned]	--
SHSD-EMS-14	[Not Assigned]	--
SHSD-EMS-15	Isopropanol Preservation of ticks	Negligible
SHSD-EMS-16	Ozone generation in the remediation of indoor air quality complaints.	Substantial

SAMPLE



See SHSD's OSH/EMS/ISM Web Page for the official copy

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Attachment 9.2

Sample of SHSD Operation Environmental Evaluations (*SOEE*) form

Before using a printed copy, verify that it is currently checking the document issued date on the website.

		SHSD Operation Environmental Evaluation Environmental Management System ISO 14001 (IH50900)	
	<p>FORM</p> <p>SHSD-EMS-01</p>	<p>HEPA Filter Testing</p>	<p>Revision: 1 Date: 09/18/06 Approved by: R. Selvey SR Manager</p>
<p>Operation Description: 100-500 cc of Emery 3004 (poly-alpha-olefin) is injected into a HEPA filtered exhaust ventilation system during testing. Penetration of this challenge agent through the filter is measured down stream of the injection site and filter.</p>			
<p>Frequency of Operation: See Inspection Schedule</p>			
<p>Environmental Impact:</p>			
<p>The IHG operates passing filter, the is discharged to the atmosphere and has negligible environmental impact.</p>	<div style="background-color: yellow; text-align: center; padding: 10px;"> <p>SAMPLE</p> <p>See SHSD's OSH/EMS/ISM Web Page for the official copy</p> </div>		
<p>The Emery 3004 is used until it is all consumed in testing. If needed, the Emery 3004 would be disposed of as a hazardous liquid via ESW/MD.</p>			
<p>Waste Disposal: Emery 3004 is used until it is all consumed in testing. It can be used over and over without package. It does not have an expiration date. If needed, the Emery 3004 would be disposed of as a hazardous liquid via ESW/MD.</p>			
<p>Qualitative Environmental Impact Risk Assessment:</p> <p><input checked="" type="checkbox"/> Negligible <input checked="" type="checkbox"/> Acceptable <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial <input type="checkbox"/> Inadequate</p>			
<p>OSH Job Risk Assessment: SHSD-IPR-01</p>			
<p>Revision History:</p>			
<p>Rev1: Converted from old IH50900 Attachment 9.1 format. No content change.</p>			